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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/551,195

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Sciichi Nagata

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EXAMINER

LANGMAN, JONATHAN C

ART UNIT

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1794

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/551,195

**Applicant(s)**

NAGATA, SEIICHI

**Examiner**

JONATHAN C. LANGMAN

**Art Unit**

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 December 2008.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.  
4a) Of the above claim(s) 6-12 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-5 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 17 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-850)  
Paper No(s)/Mail Date See Continuation Sheet  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :7/17/2006, 02/01/2008, and 05/30/2008.

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election of Group I in the reply filed on December 9, 2008 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 6-12 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected group, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on December 9, 2008.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the applicant states that "the depression of a silicon crystal is formed". It is unclear what the applicant is claiming. From the wording of the claim it seems that there is a depression in the shape of a silicon crystal. By this limitation is the applicant attempting to state the shape of the depression? Or merely stating that a

depression is formed in the silicon substrate? The claim may be more clear and precise if the applicant amended the claim to read that "wherein a depression is formed on at least one principal plane". If corrected in this manner, the applicant is kindly reminded to also amend the antecedent basis in claim 5.

Further in regards to claim 1, a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 1 recites that the glass transition temperature of the vitreous region is less than pure silica (approximately 1450 degrees Celsius), which is the broad recitation. The applicant then goes on to recite that the glass transition temperature is not more than 900 degrees Celsius which is the narrower statement of the range/limitation.

Regarding claim 4, the applicant states groups that the dopant may comprise, and then follows each group with elements in parenthesis, it is unclear if the applicant is claiming the entire group of elements, or rather just those elements in parenthesis.

Claims 2-5 are rejected for being dependent upon a base rejected claim.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishimura et al. (JP 10-300963).

Nishimura teaches an optical waveguide formed by a depression formed in a silicon substrate, and a vitreous porous silicon oxide formed within the depression (abstract). The silica is doped with Phosphorous which lowers the melting temperature (transition temperature) to the range of 600-800 degrees Celsius. This reduction allows for the formation of the optical waveguide at lower temperatures with lower amounts of strain ([0019]-[0023]). Since Nishimura teaches the same materials and the same structure as instantly claimed, it is the examiners position that the claimed material properties are inherently present in Nishimura. It has been held that where the claimed and prior art products are identical or substantially identical in structure or are produced by identical or a substantially identical processes, a prima facie case of either

anticipation or obviousness will be considered to have been established over functional limitations that stem from the claimed structure. *In re Best*, 195 USPQ 430, 433 (CCPA 1977), *In re Spada*, 15 USPQ2d 1655, 1658 ( Fed. Cir. 1990). The *prima facie* case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed products. *In re Best*, 195 USPQ 430, 433 (CCPA 1977).

Nishimura also teaches other dopants such as Boron, Germanium, Titanium, and Zirconium ([0019]).

Regarding claim 5, the size of the indentation falls within the instantly claimed sizes (see at least paragraph [0017] and the Figures).

### ***Claim Rejections - 35 USC § 102/103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Nagata (US 2001/0045613).

Nagata teaches an optical waveguide comprising a depression in a silicon wafer. The depression is filled with a vitreous material of silicon oxide. The silicon oxide is

doped with aluminum, boron, calcium, cerium and phosphorus to a desired amount ([0070]). Nagata teaches that these impurities are doped into the vitreous regions in order to manipulate the optical properties and not to control the thermal expansion coefficient or the glass transition temperature. Since Nagata teaches the same materials and the same structure as instantly claimed, it is the examiners position that the claimed material properties are inherently present in Nagata. It has been held that where the claimed and prior art products are identical or substantially identical in structure or are produced by identical or a substantially identical processes, a *prima facie* case of either anticipation or obviousness will be considered to have been established over functional limitations that stem from the claimed structure. *In re Best*, 195 USPQ 430, 433 (CCPA 1977), *In re Spada*, 15 USPQ2d 1655, 1658 ( Fed. Cir. 1990). The ***prima facie*** case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed products. *In re Best*, 195 USPQ 430, 433 (CCPA 1977).

Furthermore, Nagata never states the specific amount of dopant for the vitreous region, however, choosing an amount of dopant in order to achieve a desired optical property is well within the grasp of a routineer in the art. It is the Examiners position that the instantly taught dopant amounts are obvious choices to a routineer in the art , and necessarily produce the instantly claimed glass transition temperatures, and the instantly claimed thermal expansion coefficients. Even though Nagata and the art as is known o a routineer is centralized around doping silica for optical properties and not for mechanical properties, the art will still inherently read on the claim. The fact that



applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Regarding claim 5, the depth and width of the region fall within the instantly claimed range ([0047]-[0048]) and the length also falls within the applicants instantly claimed range (Table 2).

### ***Claim Rejections - 35 USC § 103***

Claims 1-5 are rejected under 35 U.S.C. 102 (a) as being as being unpatentable by Narendra ("Single Mode Phosphorus Doped Silica Waveguides in Silicon V-Grooves") in view of Lines "Can the minimum attenuation of fused silica be significantly reduced by small compositional variations? I. Alkali metal dopants".

Narendra teaches a single phase optical waveguide with a depression filled with vitreous silica. The depression falls within the size of the instantly claimed depression of claim 5 (pg. 43, col. 2, Second paragraph). The silica region is doped with phosphorus ((pg. 43, col. 2, third paragraph). Although Narendra does not teach a specific amount of dopant, doping silica glasses with phosphorus is known in the art and taught to achieve desired optical properties. Doping silica with phosphorus even with only small amounts of phosphorous can achieve desired optical properties and reduces the glass transition temperature below that of pure silica as taught by Lines Figure 1.

Furthermore, Lines et al. teaches using other alkali metals such as those in Group 1a, including Li and Na, and K. As can be seen in Figures 1 and 2, the transition temperature drastically drops to below 900 degrees Celsius with only minor amounts of these dopants in silica.

Furthermore, it would have been obvious to a person having ordinary skill in the art at the time the present invention was made to dope the silica glass of Narendra with any known dopant and any known dopant amount to achieve a desired optical property as is known in the art, including those dopants and impurities discussed by Lines. The obvious combination of Narendra and Lines, will necessarily and inherently result in the same mechanical properties as instantly claimed. It is the examiners position that the claimed material properties are inherently present in the prior art. It has been held that where the claimed and prior art products are identical or substantially identical in structure or are produced by identical or a substantially identical processes, a *prima facie* case of either anticipation or obviousness will be considered to have been established over functional limitations that stem from the claimed structure. *In re Best*, 195 USPQ 430, 433 (CCPA 1977), *In re Spada*, 15 USPQ2d 1655, 1658 ( Fed. Cir. 1990). The *prima facie* case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed products. *In re Best*, 195 USPQ 430, 433 (CCPA 1977).

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN C. LANGMAN whose telephone number is (571)272-4811. The examiner can normally be reached on Mon-Thurs 8:00 am - 6:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JCL

/Timothy M. Speer/  
Primary Examiner, Art Unit 1794